

Kevin J. Psoter, Anneclaire J. De Roos, Jon Wakefield, Jonathan D. Mayer and Margaret Rosenfeld- Air pollution exposure is associated with MRSA acquisition in young U.S. children with cystic fibrosis- [BMC Pulmonary Medicine](#) December 2017, 17:106

Abstract

Background

The role of air pollution in increasing susceptibility to respiratory tract infections in the cystic fibrosis (CF) population has not been well described. We recently demonstrated that chronic PM_{2.5} exposure is associated with an increased risk of initial *Pseudomonas aeruginosa* acquisition in young children with CF. The purpose of this study was to determine whether PM_{2.5} exposure is a risk factor for acquisition of other respiratory pathogens in young children with CF.

Methods

We conducted a retrospective study of initial acquisition of methicillin susceptible and methicillin resistant *Staphylococcus aureus* (MSSA and MRSA), *Stenotrophomonas maltophilia* and *Achromobacter xylosoxidans* in U.S. children <6 years of age with CF using the CF Foundation Patient Registry, 2003–2009. Multivariable Weibull regression with interval-censored outcomes was used to evaluate the association of PM_{2.5} concentration in the year prior to birth and risk of acquisition of each organism.

Results

During follow-up 63%, 17%, 24%, and 5% of children acquired MSSA, MRSA, *S. maltophilia*, and *A. xylosoxidans*, respectively. A 10 µg/m³ increase in PM_{2.5} exposure was associated with a 68% increased risk of MRSA acquisition (Hazard Ratio: 1.68; 95% Confidence Interval: 1.24, 2.27). PM_{2.5} was not associated with acquisition of other respiratory pathogens.

Conclusions

Fine particulate matter is an independent risk factor for initial MRSA acquisition in young children with CF. These results support the increasing evidence that air pollution contributes to pulmonary morbidities in the CF community.